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ABSTRACT

The strengths and weaknesses of industrial cooperative education at Macomb County Community College in Michigan are discussed. A survey was conducted of 481 students who participated in the cooperative program during the years 1970 through 1975. A sample of 731 other students who took some of the same courses during that time was also surveyed. Data were also collected from employers who knew students from both programs. Fifty-one percent of the former students and 44 percent of the employers responded. Their responses were analyzed with the use of tests of significance and descriptive statistics. Cooperative program students were more likely to complete their studies, secure full-time program-related jobs, and to be rated by their employers as efficient. The results confirm the belief of the program administrators and staff that industrial cooperative education at the college has been successful. Recruiting students and employers for the program has become easier. It is also suggested that the success of the program has helped the college acquire and maintain grants. (Author/SF)

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THE INDUSTRIAL COOPERATIVE EDUCATION PROGRAM AT MACOMB COUNTY COMMUNITY COLLEGE

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INDUSTRIAL COOPERATIVE EDUCATION

Abstract

This study was intended to appraise the strengths and weaknesses of industrial cooperative education at Macomb County Community College. A survey was made of 481 students who had been co-ops during the years 1970 through 1975 and of 731 other students who took some of the same courses during that time. Employers who knew students from both categories were also queried. Fifty-one percent of the former students and 44% of the employers responded. Their responses were analyzed with the use of tests of significance and descriptive statistics. Co-op students, it turned out, were more likely than those who had not been co-ops to complete their studies, secure full-time program-related jobs, and to be rated by their employers as efficient. These findings have confirmed the belief of the co-op administrators and staff that industrial cooperative education at the College has been largely successful. They have made recruiting co-op students and employers easier. Finally, they have helped the College acquire and maintain grants.

The Industrial Cooperative Education Program at

Macomb County Community College

Macomb College was founded in 1954. Ten years later it began to offer its students the opportunities of cooperative education. Particularly in industrial technology, the co-op program prospered, more and more students enrolling each year. Co-op seemed a success. Late in 1976, after more than a dozen years, the president of the college and the instructional administrators decided it was time for some appraisal. What did the students who had been in cooperative education think of the program? What did their employers think? How did co-op students compare with those who had many of the same courses but had never been co-ops? The Research Department was asked to find out.

We decided to limit our study to those students enrolled during six calendar years, 1970 to 1975. We learned that the records for those who were in cooperative education before 1970 were inadequate for our purpose. And we were convinced from other follow-up studies that a two-year gap between the time of enrollment and the time of a survey was the minimum required for differences between groups to become evident.

Next we developed two survey instruments, both of them brief enough not to discourage response and yet detailed enough to acquire the information necessary. The one sent to students was four pages; the one for employers, three.

These surveys were designed to discover whether or not the claims often made for cooperative education are true, at least at Macomb. Who is more likely to find a career related to his technical education, the student who had been a co-op or the student who had never been a co-op? Are those who have been in cooperative education more likely to earn a higher salary than those who took similar courses but were never co-ops? Who is more likely to graduate, the co-op or the non co-op? Do co-op students perceive the preparation they receive in school more favorably than non co-op students in the same programs? How do former co-op students rate their co-op job placements? How do former co-op students rate the relevance of their studies to their co-op job experience?

Our survey of those who had employed co-op and non co-op students asked the employers to rate the technical preparation the students had received, to evaluate from their vantage point the Industrial Cooperative Education Program, and to identify strengths and weakness of the College's various programs in Industrial Technology.

The student survey was addressed to 481 persons who were former cooperative education students and 731 others who had taken courses in the same programs but never been co-ops. The employer survey went to 87 companies.

With a sample this size, involving both students and employers, we believed we could fairly appraise both the philosophy and the practice

of cooperative education at Macomb. Moreover, we believed we could be objective. We had no brief for or against cooperative education. We had never been co-op students, teachers, coordinators, counselors, or administrators. We did not have to defend ourselves; neither did we have to attack. Finally, since the College itself funded our research, we were unconstrained by any requirements imposed by a state or federal funding agency. Our job was simply to determine whether or not the theory underlying cooperative education was true. We hoped that, when we were done, we should have a model for studies of cooperative education elsewhere.

When we studied the literature, we found we had an open field. Even the resources of ERIC turned up no follow-up studies of cooperative education in college. Surely follow-up studies like this must have been done, but they are not disseminated.

Method

The Samples

Cooperative Education Students

Cooperative education is defined as a system of education in which students participate in periods of academic study and periods of work in jobs which pertain to the program of study. A student who had completed at least one co-op job assignment while registered as a student at Macomb between 1970 and 1975, provided he or she was in a design or mechanical technology program, was eligible to be included

in the survey. We searched rosters, lists, and records in our Industrial Cooperative Education office, and eventually identified 481 such students, only 32 of them female.

Non-Cooperative Education Students

The co-op students had been enrolled in 18 different programs. But we found that 11 courses were so basic to these programs that the non co-op students must have taken them too. We obtained final grade rosters for these 11 courses. Every eighth student was chosen from those listed. When a student was identified as one who participated in cooperative education, that student was eliminated and the next student on the roster was included instead. Finally, 731 students, all but 49 of them male, were selected.

Employers

A list of 68 companies participating in the Industrial Cooperative Education Program from 1970 through 1975 was compiled from records obtained from the co-op office. The College's placement office and the Southeastern Michigan League of Community Colleges' Regional Placement Center identified 19 more companies which had hired our students of industrial technology. All of these 87 companies were asked to respond to our employers' survey.

Data Gathering Instruments

Student Survey

The student survey was designed to gather the following information:

1. current job status
2. salary
3. method of obtaining employment
4. work experience previous to college training
5. reasons for attending Macomb
6. education since leaving Macomb
7. four-year colleges attended
8. rating of the educational program at Macomb
9. rating of cooperative education experience
10. suggestions and comments

Several means were used to encourage response. First, the survey was printed on colored paper, to make it more attractive. The form was mailed with a cover letter signed by the Dean of Technical Education and the two coordinators of Industrial Cooperative Education. A reminder post card was mailed a week after the instrument itself. Finally, each respondent was given a chance to win a hand calculator selected as most useful in technical work.

Employer Survey

The survey instrument sent to the companies was designed to yield the following information:

1. number of employees who had been trained at Macomb between 1970 and 1975

2. number of employees who had participated in Macomb's Industrial Co-op Program
3. a rating of the technical preparation received at Macomb by their employees
4. an evaluation of some effects of cooperative education
5. comments and suggestions

The cover letter was signed by the Dean of Technical Education and a coordinator of Industrial Cooperative Education. To assure confidentiality and frankness, all inquiries about both surveys were directed to the Research Department and all survey forms were mailed there in pre-addressed and stamped envelopes.

Procedure

Student Survey

The first mailing of the student survey was sent April 18, 1977. A week later the reminder post card followed. A second mailing of the survey to those who had not already responded was sent May 17. A 51.4% return was achieved by the announced closing date of June 22. As returns began coming in, they were coded, and various lists were made to record suggestions and comments, the names of colleges attended, and so forth. All returns were used in the analysis. Even though a questionnaire was not filled out completely, what responses it did contain were included, with no harm to the subsequent statistical analysis.

Employer Survey

Letters went mailed to the employers on February 25, 1977. Response was slow, prompting us to do a random telephone survey. Quickly we found out that some of the contacts whom we had addressed had moved on to new places of employment. Eventually we called every company to which we had written and determined who it was in each firm who would be in a position to give us a response. Then we sent out a second copy of our survey. Within 10 days of this mailing we had received a total of 45 responses, 54% of the firms in our sample.

Analysis of the Surveys

The information from the two surveys was coded and transferred onto Datronics Scoring Sheets for computer scoring. Each group was tabulated separately. The student surveys gave us:

1. frequency counts for each item
2. percentage equivalents for each response, categorized by various identifiable groupings
3. a mean score for each item
4. a standard deviation for each item
5. Z-scores for each item

Data were analyzed for each student group in the following categories:

1. program
2. program completion
3. employment status

The data for each group as a whole were also analyzed to determine variations between the co-op and the non co-op student respondents. Then lists of four-year colleges and programs chosen by the respondents were prepared. Finally, the students' comments and suggestions were compiled.

The information from the company survey led to a tabulation of frequency counts and calculations of the range, mean, median, mode, and percentage values for each item, as well as a compilation of comments and suggestions.

Results

In general, the results of the study show that students who had the co-op experience were more likely than non co-op students to:

1. have full-time program related jobs
2. experience a lower employment rate
3. complete their college programs
4. satisfy their reasons for enrolling at Macomb
5. perceive the preparation they received at Macomb favorably
6. be considered more efficient by employers
7. learn more quickly on the job
8. understand company organization better

These results constitute substantial support for Industrial Cooperative Education at Macomb County Community College. Specifics bear out these conclusions.

Before enrolling at Macomb 61% of the non co-op students had full-time jobs, and 30% held jobs related to the technical program they entered. In contrast, only 41% of the co-ops had full-time jobs before enrolling, and just 19% worked in positions related to the technical program in which they later enrolled. But at the time of the survey, 65% of those who had been co-ops were employed full-time in a program related job. In contrast, just 44% of the non co-ops were so employed. Both groups profited from their education; the co-ops, however, gained far more. The non co-ops, more than the co-ops, tended to find their jobs through employment agencies, advertisements, and parents, relatives, and friends. But the co-ops were far more likely to get help from the College placement office. Thirty-seven percent of the co-ops continued with the companies where they had been employed as co-ops. The same percentage of non co-ops were with the companies at the time of the survey that had employed them when they were in school. However, the average salary for the non co-op group was significantly higher ($p < .01$) than the average salary of the co-ops.

Asked why they came to Macomb, both groups most frequently said that they were trying to prepare themselves for different jobs than what they had had. Job upgrading motivated far more non co-ops than co-ops, 33% compared to 12%. On the other hand, more co-ops than non co-ops were preparing for college transfer, 28% compared to 23%.

Not everyone who responded to the survey told us whether or not he had graduated. But of those who did, 67% of the co-ops said they graduated, but only 39% of the non co-ops said they did, a 28% difference. Of the co-ops, 65% continued their education after leaving Macomb, as did 61% of the non co-ops. Of the co-ops, 22% attended a four-year college; for the non co-ops, the figure was higher, 28%.

The co-ops generally were more satisfied with their training than the non co-ops. In fact, when asked about the value of their hands-on experience and the rating of their program and when asked whether or not they felt their studies had helped them get a better job, the response of the co-ops was significantly ($t = < .01$) more favorable than that of the non co-ops. When asked whether or not their education at Macomb had helped them to get along better with others and also to communicate better, the non co-ops who had not graduated were significantly ($t = < .05$) more satisfied than the co-ops.

Rating their co-op job placements, 83% of the co-ops thought their placement had been good or excellent. But they did not think as highly of the relevance of their courses to their job placements; considering relevance 67% of the respondents rated it good or excellent. Co-op graduates, however, were significantly ($t = < .05$) more likely than those who had not graduated to rate their course work as relevant. Also, if they had a job related to their program, they were significantly ($t = < .01$) more likely than those who held jobs not related to their program to believe their courses were relevant.

Employers were asked to rate the technical preparation received at Macomb by co-ops they had hired. Eighty-eight percent ranked it as adequate or excellent; 10% as fair; and 2% as poor. Asked about the students they had hired who had never been co-ops, they responded the same way. The employers did believe, however, that former co-op students are more efficient workers (62%), learn more quickly on the job (73%), and understand the company better (65%) than others. Commenting on the industrial technology programs at Macomb, the employers pointed out a number of strengths and weaknesses and made many suggestions for improvement.

Discussion

In general, industrial cooperative education at Macomb has been successful and has lived up to expectations. A student who has been a co-op has a substantially greater chance to obtain a full-time job in a program related area than one who has not participated in co-op, 65% versus 44%. This finding is striking when we remember that, before entering co-op, only 19% had had previous job related experience while 30% of the non co-ops had had such experience. When we looked at salaries for the two groups, however, we found that former co-op students earn significantly less ($t = < .01$) than the others. Since the non co-ops as a whole had more previous program related work experience and tended more to be seeking job upgrading rather than employment, this finding is not disappointing to proponents of co-op education.

In their comments and suggestions both students and employers urged more hands-on experience, practical work, and problem solving. Students who had not been in cooperative education demanded such opportunities even more than the co-ops. This tends to indicate that the co-ops were more likely to satisfy these needs as they went along, alternating education and work.

In sum, most of the claims made for cooperative education have been validated in this appraisal of Macomb's program. The investment made in cooperative education has paid dividends to the students.

The study has also benefited the school. It has proved Macomb's dedication to unbiased research of cooperative education and led to the College's being awarded a federal grant for further research into co-op, a grant since renewed. Independently of that grant, the College has continued its research in four succeeding studies of industrial cooperative education, once each on design technology, mechanical technology, women students, and academic performance. These studies have bolstered the morale of the co-op administrators and staff and provided ideas for recruiting, enrollment, and instruction.